Aviation Investigation Final Report

Location:	Fayetteville, North Carolina	**Accident Number:**	ERA20LA105
Date & Time:	February 17, 2020, 13:35 Local	**Registration:**	N5185R
Aircraft:	Cessna 172	**Aircraft Damage:**	Substantial
Defining Event:	Loss of control in flight	**Injuries:**	4 Serious
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The flight instructor was taking three local community college students on an orientation flight. The passenger in the front left seat was on the controls with the instructor during the takeoff. Witnesses observed the airplane pitch up aggressively during the takeoff, approaching a near vertical attitude before stalling and impacting the ground adjacent to the runway. The engine continued to run normally during the event. A rear seat passenger reported that the flight instructor told the passenger to let go of the controls, but that the passenger continued pulling back. The front seat passenger stated that after the airplane "tilted too far back" during the takeoff, he kept his hands on the yoke for several seconds before he eventually let go. Due to the extent of his injuries, the flight instructor did not recall the event. All four occupants sustained serious injuries and the airplane was substantially damaged. An examination of the wreckage did not reveal evidence of a mechanical malfunction or anomaly.

Given this information, it is likely that the front seat passenger who was manipulating the controls with the pilot applied excessive back pressure on the yoke, resulting in an over rotation, aggressive initial climb, and subsequent aerodynamic stall. The flight instructor's remedial actions were not sufficient to prevent the stall, and the airplane subsequently impacted the ground.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The passenger's excessive control application during the takeoff and the flight instructor's inadequate remedial action, which resulted in an aerodynamic stall and impact with terrain.

Findings

Aircraft	Pitch control - Not attained/maintained
Personnel issues	Use of equip/system - Passenger
Personnel issues	Delayed action - Instructor/check pilot

Factual Information

History of Flight

Initial climb	Loss of control in flight (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

On February 17, 2020, about 1535 eastern standard time, a Cessna 172M, N5185R, was substantially damaged when it was involved in an accident near Fayetteville, North Carolina. The flight instructor and three passengers were seriously injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 instructional flight.

According to information provided by the operator and witness statements, the purpose of the flight was to orient local community college students with general aviation. The pilot, who was also a flight instructor, was seated in the right cockpit seat. The passengers occupied the other three seats. During the takeoff, the passenger in the left seat was on the flight controls with the instructor. Witnesses watching the takeoff (some of whom were flight instructors), described that as soon as the main wheels left the runway, the airplane pitched up aggressively. The airplane pitched up to a higher-than-normal pitch attitude, stalled, then collided with terrain adjacent to the runway. They also reported that the engine continued to run normally during the accident sequence.

The evening of the accident, one of the flight instructors employed by the operator visited the hospital and spoke to the passengers. She reported that one of the rear seat passengers described to her that during the takeoff the flight instructor called out for the passenger to let go; however, the passenger did not relinquish the controls. She further described that she started screaming as the airplane descended toward the ground.

In a deposition taken after the accident, the front seat passenger stated that before the takeoff, the flight instructor provided him with instructions on when to initiate the takeoff. He recalled that between a speed of 70 to 80 mph, the flight instructor would tell him to either “push in or pull out” the airplane’s control yoke. The passenger could not recall which direction he moved the yoke during the takeoff but stated that when the airplane reached about 75 mph the instructor told him to rotate the airplane slowly. After lifting off, the airplane “tilted too far back” and the passenger was only able to see the sky out of the airplane’s windscreen. He stated that the airplane, “started going straight up” and “…I was kind of, you know, freaking out…” As the airplane lifted off, his hands were still on the yoke. As the airplane pitched up, he took his hands off the yoke. He estimated that he kept his hands on the yoke after liftoff for a “couple of seconds.” He also stated that no one told him to take his hands off the yoke before he took his hands off the yoke. The flight instructor called out that he was trying to regain control and not to touch anything. The airplane began descending as “alerts” were going off in the cockpit, and the airplane subsequently impacted the ground.

Inspectors with the Federal Aviation Administration responded to the accident site and examined the wreckage. The fuselage and both wings were structurally damaged. The propeller separated from the engine. They reported that their examination of the airplane did not reveal any evidence of a mechanical malfunction or anomaly. They also calculated the airplane's estimated weight and balance at the time of the accident, finding that the airplane was below its maximum gross weight and within center of gravity limits. The operator also reported that there were no mechanical issues with the airplane prior to the accident.

The flight instructor, due to the severity of his injuries, did not recall the event.

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	19,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane single-engine	**Toxicology Performed:**	No
Medical Certification:	Class 3 Without waivers/limitations	**Last FAA Medical Exam:**	March 3, 2016
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	August 7, 2019
Flight Time:	533 hours (Total, all aircraft), 187 hours (Total, this make and model), 393 hours (Pilot In Command, all aircraft), 46 hours (Last 90 days, all aircraft), 43 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N5185R
Model/Series:	172 M	**Aircraft Category:**	Airplane
Year of Manufacture:	1974	**Amateur Built:**	
Airworthiness Certificate:	Normal; Utility	**Serial Number:**	17263402
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	January 6, 2020 100 hour	**Certified Max Gross Wt.:**	2299 lbs
Time Since Last Inspection:	98 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	6863 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	C91 installed, activated, did not aid in locating accident	**Engine Model/Series:**	O-320-E2D
Registered Owner:	Cape Fear Aviation Maintenance Llc	**Rated Power:**	150 Horsepower
Operator:	Cape Fear Aviation Maintenance Llc	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KFAY,186 ft msl	**Distance from Accident Site:**	6 Nautical Miles
Observation Time:	14:21 Local	**Direction from Accident Site:**	343°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots / None	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	90°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	30.15 inches Hg	**Temperature/Dew Point:**	16°C / 7°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Fayetteville, NC (2GC)	**Type of Flight Plan Filed:**	None
Destination:	Fayetteville, NC (2GC)	**Type of Clearance:**	None
Departure Time:	13:35 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	Grays Creek 2GC	**Runway Surface Type:**	Asphalt
Airport Elevation:	160 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	35	**IFR Approach:**	None
Runway Length/Width:	3500 ft / 30 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:	3 Serious	**Aircraft Fire:**	None
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	4 Serious	**Latitude, Longitude:**	34.893611,-78.843612(est)

Administrative Information

Investigator In Charge (IIC):	Hicks, Ralph
Additional Participating Persons:	Corey Paczkowski; FAA/FSDO; Greensboro, NC
Original Publish Date:	May 19, 2022
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=100961